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EXAMINER	
SMITH, JENNIFER A	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,897	GODFREY ET AL.	
	Examiner	Art Unit	
	JENNIFER A. SMITH	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,7,10,12 and 14-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,7,10,12 and 14-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application

Claims 1, 7, 10, 12, 14, 15, 17, 19, 27, 28, and 36 are amended

Claims 4-6, 8, 9, 11, and 13 are canceled.

Claims 1-3, 7, 10, 12, and 14-36 are pending and presented for examination.

Withdrawal of Claim Objections

The objection to claims 1 and 15 are withdrawn in view of Applicants' amendments to the claims to correct the informalities.

Withdrawal of Claim Rejections - 35 USC § 112, 2nd Paragraph

The rejection to claims 19 and 28-35 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, is withdrawn in view of Applicants' amendments to the claims to clarify issues of antecedent basis.

Withdrawal of Claim Rejections - 35 USC § 102

The rejection of the claims under 35 U.S.C. 102(b) as being anticipated by Roy et al. (US Patent No. 5,545,796) is withdrawn in view of Applicants' amendments to the claims.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 7, 14-18, 21-25, and 28-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roy et al. (US Patent No. 5,545,796) in view of Newton (US Patent No. 5,700,107).

In regard to claims 1, 14-17 and 36, Roy et al. teach a method of containing a radioactive metal in a containment storage system. The radioactive metal includes uranium from a waste material [See Example 2, Column 17, line 2]. The radioactive waste is fixed in a matrix of a concrete binder [See Column 5, lines 26-30]. It is essential to thoroughly mix and disperse the contaminated material into its binder, so that the binder forms a matrix containing and firmly binding the discrete pieces or particles of contaminated material. In most cases where the binder is concrete, the cement used will be clean and non-contaminated so that good bonding is achieved [See Column 7, lines 61-66]. To minimize corrosion of the uranium metal, it is preferred to limit the amount of water used in the concrete mixture, supplementing the need for

water for workability with plasticizer materials [See Column 14, lines 30-35]. Additives such as air entrainer materials, cause microscopic air bubbles (oxygen) in the cured containment system. These air bubbles provide an insulative effect and increase freeze/thaw resistance to cracking [See Column 15, lines 26-31].

The Roy reference does not teach the independent source of oxygen to be a peroxide, specifically an inorganic peroxide such as calcium peroxide or magnesium peroxide.

Newton is drawn to a method of remediating contaminated soil by chelating the pollutants in a matrix comprising cement [See Abstract]. The matrix-generating agent may also include an oxidizing agent such as calcium peroxide or hydrogen peroxide in an amount from about 1 to about 3 percent oxidizing agent [See Column 4, lines 9-16].

One of ordinary skill in the art, at the time of Applicant's invention, would have been motivated to include a peroxide oxygen source as taught in the Newton reference in the method of Roy et al. because they act as oxidizing agents to assist in oxidizing the pollutants [See Column 4, lines 9-16].

In regard to claim 2, the radioactive metal includes uranium from a waste material [See Example 2, Column 17, line 2].

In regard to claims 3 and 7, additives such as air entrainer materials, cause microscopic air bubbles in the cured containment system. These air bubbles provide an insulative effect and increase freeze/thaw resistance to cracking [See Column 15, lines 26-31].

The matrix-generating agent may also include an oxidizing agent, to assist in oxidizing the pollutants, in particular organic pollutants. Oxidizing agents useful in the present invention include the sodium or potassium salts of permanganate, chlorate or persulfate, calcium peroxide, hydrogen peroxide, and the like. Preferably, the matrix-generating agent comprises from about 1 to about 3 percent oxidizing agent.

In regard to claim 18, Roy et al. teach adding a plasticizer to the cement mixture [See Figure 7].

In regard to claim 21, the Roy reference fails to teach the percentage of plasticizer added to the cementitious material.

One of ordinary skill in the art would be motivated to determine the optimal and workable ranges of the plasticizer within the prior art conditions. Differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical. “[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover

the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05 IIA.

In regard to claim 22, Roy et al. teach the use of Portland Cement in Column 14, lines 20 and 22.

In regard to claims 23 and 24, Roy et al. teach the addition of fillers such as ash or silica fume [See Figure 7, and Column 5, lines 63-65].

In regard to claim 25, Roy et al. teach the binder material is a concrete mixture of cement and water [See Claim 11].

In regard to claim 28, the concrete is mixed, ensuring even distribution of the radioactive materials. The containers were cured for 2 days [See Column 18, lines 22-25].

In regard to claim 29, the container formed of concrete is capped with a lid (14) in Figure 4.

In regard to claim 30, Roy et al. teach use of the articles as containers of every conceivable dimension, shape, weight, and capacity for processing temporarily or permanently holding, isolating, disposing, or preserving radioactive or hazardous

materials, wastes, waste residues, spent materials, or by-products therefrom; which include radioactive waste or hazardous waste [See Column 3, lines 37-42].

One of ordinary skill in the art, at the time of Applicant's invention, would have been motivated to determine the optimal size of the container. Generally differences in size, proportion, and shape do not support the patentability of an article. See MPEP 2144.04 IV A and B.

In regard to claim 31, it is essential to thoroughly mix and disperse the contaminated material into its binder, so that the binder forms a matrix containing and firmly binding the discrete pieces or particles of contaminated material. In most cases where the binder is concrete, the cement used will be clean and non-contaminated so that good bonding is achieved [See Column 7, lines 61-66]. To minimize corrosion of the uranium metal, it is preferred to limit the amount of water used in the concrete mixture, supplementing the need for water for workability with plasticizer materials [See Column 14, lines 30-35]. The plasticizer material is mixed with the cement mixture as shown in Figure 7 of the Roy reference.

In regard to claim 32-35, Roy et al. does not explicitly teach the sequence of the process steps.

In Example 2, the forms (containers) were then filled with a radioactive concrete mixture. After the concrete mixture is thoroughly mixed and at a consistency of about a 3 to 7 cm slump, the plasticizer and radioactive metal, are slowly added, preferably, over a 10 minute to 20 minute period, at a stir-mixing rate, preferably, of approximately 30 rpm to 50 rpm, for batches of 900 to 2,700 kg. Interpreting the steps sequence of steps in Figure 7 one of ordinary skill in the art would understand the cement and means for minimization of corrosion (plasticizer) are mixed into a composition prior to introduction into the form system (container).

Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the method of Roy in any order of steps or combination thereof (i.e. mixing prior to introduction into the container, mixing after introduction, or mixing in a batch-wise or continuous, in-line manner) motivated by the fat that the selection of any order of performing process steps is prima facia obvious in the absence of new or unexpected results and the selection of any order of mixing ingredients is prima facia obvious. See MPEP 2144.04 IV-C.

Claims 1-3, 7, 10, 18-25, and 28-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roy et al. (US Patent No. 5,545,796) in view of Bustard et al. (US Patent No. 4,230,597).

In regard to claim 1, Roy et al. teach a method of containing a radioactive metal in a containment storage system. The radioactive metal includes uranium from a waste material [See Example 2, Column 17, line 2]. The radioactive waste is fixed in a matrix of a concrete binder [See Column 5, lines 26-30]. It is essential to thoroughly mix and disperse the contaminated material into its binder, so that the binder forms a matrix containing and firmly binding the discrete pieces or particles of contaminated material. In most cases where the binder is concrete, the cement used will be clean and non-contaminated so that good bonding is achieved [See Column 7, lines 61-66]. To minimize corrosion of the uranium metal, it is preferred to limit the amount of water used in the concrete mixture, supplementing the need for water for workability with plasticizer materials [See Column 14, lines 30-35]. Additives such as air entrainer materials, cause microscopic air bubbles (oxygen) in the cured containment system. These air bubbles provide an insulative effect and increase freeze/thaw resistance to cracking [See Column 15, lines 26-31].

The Roy reference does not teach an anionic or non-ionic surfactant.

Bustard et al. is drawn to a way of converting radioactive waste into solid form [See Abstract]. A nonionic, cationic, or anion surfactant is provided as a defoaming material [See Column 3, lines 63-65]

One of skill in the art, at the time of Applicant's invention, would have been motivated to provide a surfactant like those taught in the Bustard reference as a defoaming agent in the radioactive metal encapsulation process. It has been found that many radioactive waste materials tend to foam upon addition of the acid-curing agent. The surfactant works as a defoaming agent which in a preferred embodiment comprises reducing the interfacial tension between the two liquids or between a liquid solid mixture." [See Column 3, lines 56-68].

In regard to claim 2, the radioactive metal includes uranium from a waste material [See Example 2, Column 17, line 2].

In regard to claims 3 and 7, additives such as air entrainer materials, cause microscopic air bubbles in the cured containment system. These air bubbles provide an insulative effect and increase freeze/thaw resistance to cracking [See Column 15, lines 26-31].

In regard to claim 10, the Bustard reference fails to teach the percentage of surfactant in the material.

One of ordinary skill in the art would be motivated to determine the optimal and workable ranges of the surfactant within the prior art conditions. Differences in concentration will not support the patentability of subject matter encompassed by the

prior art unless there is evidence indicating such concentration is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05 IIA.

In regard to claim 18, Roy et al. teach adding a plasticizer to the cement mixture [See Figure 7].

In regard to claim 19, the Roy reference does not teach a surfactant.

Bustard et al. is drawn to a way of converting radioactive waste into solid form [See Abstract]. A nonionic, cationic, or anion surfactant is provided as a defoaming material [See Column 3, lines 63-65]

One of skill in the art, at the time of Applicant's invention, would have been motivated to provide a surfactant like those taught in the Bustard reference as a defoaming agent in the radioactive metal encapsulation process. It has been found that many radioactive waste materials tend to foam upon addition of the acid-curing agent. The surfactant works as a defoaming agent which in a preferred embodiment comprises reducing the interfacial tension between the two liquids or between a liquid solid mixture." [See Column 3, lines 56-68].

In regard to claim 20, Bustard et al. teach a plasticizer/surfactant material that comprises a modified polyacrylamide [See Claim 7]

In regard to claim 21, the Roy reference fails to teach the percentage of plasticizer added to the cementitious material.

One of ordinary skill in the art would be motivated to determine the optimal and workable ranges of the plasticizer within the prior art conditions. Differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05 IIA.

In regard to claim 22, Roy et al. teach the use of Portland Cement in Column 14, lines 20 and 22.

In regard to claims 23 and 24, Roy et al. teach the addition of fillers such as ash or silica fume [See Figure 7, and Column 5, lines 63-65].

In regard to claim 25, Roy et al. teach the binder material is a concrete mixture of cement and water [See Claim 11].

In regard to claim 28, the concrete is mixed, ensuring even distribution of the radioactive materials. The containers were cured for 2 days [See Column 18, lines 22-25].

In regard to claim 29, the container formed of concrete is capped with a lid (14) in Figure 4.

In regard to claim 30, Roy et al. teach use of the articles as containers of every conceivable dimension, shape, weight, and capacity for processing temporarily or permanently holding, isolating, disposing, or preserving radioactive or hazardous materials, wastes, waste residues, spent materials, or by-products therefrom; which include radioactive waste or hazardous waste [See Column 3, lines 37-42].

One of ordinary skill in the art, at the time of Applicant's invention, would have been motivated to determine the optimal size of the container. Generally differences in size, proportion, and shape do not support the patentability of an article. See MPEP 2144.04 IV A and B.

In regard to claim 31, it is essential to thoroughly mix and disperse the contaminated material into its binder, so that the binder forms a matrix containing and firmly binding the discrete pieces or particles of contaminated material. In most cases

where the binder is concrete, the cement used will be clean and non-contaminated so that good bonding is achieved [See Column 7, lines 61-66]. To minimize corrosion of the uranium metal, it is preferred to limit the amount of water used in the concrete mixture, supplementing the need for water for workability with plasticizer materials [See Column 14, lines 30-35]. The plasticizer material is mixed with the cement mixture as shown in Figure 7 of the Roy reference.

In regard to claim 32-35, Roy et al. does not explicitly teach the sequence of the process steps.

In Example 2, the forms (containers) were then filled with a radioactive concrete mixture. After the concrete mixture is thoroughly mixed and at a consistency of about a 3 to 7 cm slump, the plasticizer and radioactive metal, are slowly added, preferably, over a 10 minute to 20 minute period, at a stir-mixing rate, preferably, of approximately 30 rpm to 50 rpm, for batches of 900 to 2,700 kg. Interpreting the steps sequence of steps in Figure 7 one of ordinary skill in the art would understand the cement and means for minimization of corrosion (plasticizer) are mixed into a composition prior to introduction into the form system (container).

Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the method of Roy in any order of steps or combination thereof (i.e. mixing prior to introduction into the container, mixing after

introduction, or mixing in a batch-wise or continuous, in-line manner) motivated by the fat that the selection of any order of performing process steps is prima facia obvious in the absence of new or unexpected results and the selection of any order of mixing ingredients is prima facia obvious. See MPEP 2144.04 IV-C.

Claims 1-3, 7, 12, 18, 21-25, and 28-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roy et al. (US Patent No. 5,545,796) in view of Datta et al. (US Patent Publication No. 2004/0079260).

In regard to claim 1, Roy et al. teach a method of containing a radioactive metal in a containment storage system. The radioactive metal includes uranium from a waste material [See Example 2, Column 17, line 2]. The radioactive waste is fixed in a matrix of a concrete binder [See Column 5, lines 26-30]. It is essential to thoroughly mix and disperse the contaminated material into its binder, so that the binder forms a matrix containing and firmly binding the discrete pieces or particles of contaminated material. In most cases where the binder is concrete, the cement used will be clean and non-contaminated so that good bonding is achieved [See Column 7, lines 61-66]. To minimize corrosion of the uranium metal, it is preferred to limit the amount of water used in the concrete mixture, supplementing the need for water for workability with plasticizer materials [See Column 14, lines 30-35]. Additives such as air entrainer materials, cause microscopic air bubbles (oxygen) in the cured containment system. These air

bubbles provide an insulative effect and increase freeze/thaw resistance to cracking [See Column 15, lines 26-31].

The Roy reference fails to teach cenospheres in the cementitious material.

Datta et al. is drawn to the production of synthetic cenosphere-like microspheres. The synthetic microspheres are substantially chemically inert and thus a suitable replacement for natural cenospheres [See Abstract]. For these reasons, we can expect the microspheres and cenospheres to have similar characteristics and uses. The microspheres may be used as fillers in inorganic cementitious materials (including material comprising Portland cement, lime cement, alumina-based cements, plaster, phosphate-based cements, magnesia-based cements and other hydraulically settable binders) or concrete systems (including precise concrete structures, tilt up concrete panels, columns, suspended concrete structures etc.) [See Paragraph 0117].

One of ordinary skill in the art, at the time of Applicant's invention, would have been motivated to include cenospheres in the cement material of the Roy reference because filler materials are commonly used to impart properties of weight reduction, improved processing, performance enhancement, improved machinability and/or improved workability to the cement material [See Datta, Paragraph 0117].

In regard to claim 2, the radioactive metal includes uranium from a waste material [See Example 2, Column 17, line 2].

In regard to claims 3 and 7, additives such as air entrainer materials, cause microscopic air bubbles in the cured containment system. These air bubbles provide an insulative effect and increase freeze/thaw resistance to cracking [See Column 15, lines 26-31].

In regard to claim 12, the Datta reference fails to teach the percentage of cenospheres added to the cementitious material.

One of ordinary skill in the art would be motivated to determine the optimal and workable ranges of the plasticizer within the prior art conditions. Differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05 IIA.

In regard to claim 18, Roy et al. teach adding a plasticizer to the cement mixture [See Figure 7].

In regard to claim 21, the Roy reference fails to teach the percentage of plasticizer added to the cementitious material.

One of ordinary skill in the art would be motivated to determine the optimal and workable ranges of the plasticizer within the prior art conditions. Differences in concentration will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). See MPEP 2144.05 IIA.

In regard to claim 22, Roy et al. teach the use of Portland Cement in Column 14, lines 20 and 22.

In regard to claims 23 and 24, Roy et al. teach the addition of fillers such as ash or silica fume [See Figure 7, and Column 5, lines 63-65].

In regard to claim 25, Roy et al. teach the binder material is a concrete mixture of cement and water [See Claim 11].

In regard to claim 28, the concrete is mixed, ensuring even distribution of the radioactive materials. The containers were cured for 2 days [See Column 18, lines 22-25].

In regard to claim 29, the container formed of concrete is capped with a lid (14) in Figure 4.

In regard to claim 30, Roy et al. teach use of the articles as containers of every conceivable dimension, shape, weight, and capacity for processing temporarily or permanently holding, isolating, disposing, or preserving radioactive or hazardous materials, wastes, waste residues, spent materials, or by-products therefrom; which include radioactive waste or hazardous waste [See Column 3, lines 37-42].

One of ordinary skill in the art, at the time of Applicant's invention, would have been motivated to determine the optimal size of the container. Generally differences in size, proportion, and shape do not support the patentability of an article. See MPEP 2144.04 IV A and B.

In regard to claim 31, it is essential to thoroughly mix and disperse the contaminated material into its binder, so that the binder forms a matrix containing and firmly binding the discrete pieces or particles of contaminated material. In most cases where the binder is concrete, the cement used will be clean and non-contaminated so

that good bonding is achieved [See Column 7, lines 61-66]. To minimize corrosion of the uranium metal, it is preferred to limit the amount of water used in the concrete mixture, supplementing the need for water for workability with plasticizer materials [See Column 14, lines 30-35]. The plasticizer material is mixed with the cement mixture as shown in Figure 7 of the Roy reference.

In regard to claim 32-35, Roy et al. does not explicitly teach the sequence of the process steps.

In Example 2, the forms (containers) were then filled with a radioactive concrete mixture. After the concrete mixture is thoroughly mixed and at a consistency of about a 3 to 7 cm slump, the plasticizer and radioactive metal, are slowly added, preferably, over a 10 minute to 20 minute period, at a stir-mixing rate, preferably, of approximately 30 rpm to 50 rpm, for batches of 900 to 2,700 kg. Interpreting the steps sequence of steps in Figure 7 one of ordinary skill in the art would understand the cement and means for minimization of corrosion (plasticizer) are mixed into a composition prior to introduction into the form system (container).

Nonetheless, it would have been obvious to one of ordinary skill in the art at the time of the invention to have practiced the method of Roy in any order of steps or combination thereof (i.e. mixing prior to introduction into the container, mixing after introduction, or mixing in a batch-wise or continuous, in-line manner) motivated by the

fat that the selection of any order of performing process steps is prima facia obvious in the absence of new or unexpected results and the selection of any order of mixing ingredients is prima facia obvious. See MPEP 2144.04 IV-C.

Claims 26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roy et al. (US Patent No. 5,545,796) in view of any one of Newton et al. (US Patent No. 5,700,107), Bustard et al. (US Patent No. 4,230,597), Datta et al. (US Patent Publication No. 2004/0079260), and further in view of Mallek et al. (US Patent No. 4,652,404).

In regard to claims 26 and 27, the Roy, Newton, Bustard, and Datta references fail to teach water content in the claimed ranges with regard to the cement composition.

Mallek et al. teaches a process for cementing waste materials. Radioactive wastes are mixed with aqueous cement in a ratio of 0.3:1, water: cement [See Column 3, lines4-6].

One of ordinary skill in the art, at the time of Applicant's invention, would have been motivated to provide an aqueous cement mixture in the ratios taught in the Mallek reference for affecting the setting of the cement [See Column 3, lines 1-11].

Response to Arguments

Applicant's arguments, filed 10/19/2009, have been fully considered but are persuasive. The previous rejections to the claims have been withdrawn in view of Applicants' amendments. However, upon further consideration, a new ground(s) of rejection has been made above.

First, Applicants argue the Roy reference does not teach minimizing the corrosion of the uranium metal that is contained in the containment system. To minimize corrosion of the uranium metal, it is preferred to limit the amount of water used in the concrete mixture, supplementing the need for water for workability with plasticizer materials [See Column 14, lines 30-35]. Additives such as air entrainer materials, cause microscopic air bubbles (oxygen) in the cured containment system. These air bubbles provide an insulative effect and increase freeze/thaw resistance to cracking [See Column 15, lines 26-31]. These additive materials (plasticizers) increase freeze/thaw resistance to cracking in the arrangement and therefore work to minimize corrosion of the uranium metal by preventing exposure of the metallic elements to harmful conditions that result from cracking.

Second, Applicants argue the limitation drawn to water content in the Roy reference does not minimize uranium metal corrosion but rather relates to the consistency of the cement mixture and relates this teaching to the teachings of the present specification. Even if these arguments are persuasive, other additives can also

be used in the encapsulation material taught in the Roy reference. For example air entrainer materials, which, when added in a small effective amount, causes microscopic air bubbles in the cured containment system upon cure. These microscopic air bubbles provide an insulative effect and increase freeze/thaw resistance to cracking. Another useful additive is a hardener which also allows reduction of water content and improves workability and finish. These additives work to minimize corrosion of the radioactive material by ensuring a stable containment system that is protected from materials that encourage corrosion.

Third, Applicants argue there is not teaching or suggestion to remedy the deficiencies in the Roy reference with those of Newton et al. and the acidity of the set-up would be disastrous and corrosive when attempting to encapsulate uranium metal. The Newton reference is cited to remedy the deficiencies in the Roy reference - for example Roy et al. do not teach a wide variety of air entrainer materials. An air/oxygen source that is commonly used in hazardous material encapsulation includes a number of peroxides. One of ordinary skill in the art, at the time of Applicant's invention, would have been motivated to include a peroxide oxygen source as taught in the Newton reference in the method of Roy et al. because they act as oxidizing agents to assist in oxidizing the pollutants. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so

found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Forth, Applicants argue one of ordinary skill would have no motivation to select a defoaming agent like that taught in the Bustard reference. One of skill in the art, at the time of Applicant's invention, would have been motivated to provide a surfactant like those taught in the Bustard reference as a defoaming agent in the radioactive metal encapsulation process. It has been found that many radioactive waste materials tend to foam upon addition of the acid-curing agent. The surfactant works as a defoaming agent which in a preferred embodiment comprises reducing the interfacial tension between the two liquids or between a liquid solid mixture." A nonionic, cationic, or anion surfactant can act as a defoaming agent. This ensures that the materials stored in the solid form such as in the Roy and Bustard references are stable and therefore prevents corrosion.

Fifth, Applicants argue Datta makes no reference to the encapsulation of uranium metal, nor does it consider how this might be done to minimize corrosion of the metal. The Datta reference, although not directly related to the encapsulation of uranium metal, serves to remedy the deficiencies of the Roy reference with respect the specific air entraining material. Roy is clear as to the steps taken to minimize corrosion with respect to water content and air content in the final material.

Sixth, Applicants argue it would be illogical to combine the teachings of Mallek with those of Roy. Roy teaches the amount of water should be no greater than a 1:9 ratio and to arrive at the weight ratios claimed by Mallek one would have to increase the amount of water in the Roy matrix above the minimum even though Roy teaches limiting this value. Mallek et al. teaches a process for cementing waste materials. Radioactive wastes are mixed with aqueous cement in a ratio of 0.3:1, water: cement [See Column 3, lines4-6]. Applicants arguments drawn to the approximate weight ratios taught in the Roy reference are not persuasive. The values are calculated based on (water):(all other elements). The ratio of just water to just cement lies in the range 1-2:3-4 and thus it would not be unreasonable to expect a water content in the range taught by the Mallek reference.

Conclusion

Claims 1-3, 7, 10, 12, and 14-36 remain rejected.

No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. SMITH whose telephone number is (571)270-3599. The examiner can normally be reached on Monday - Friday, 9:30am to 6:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorgengo can be reached on (571)272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer A. Smith
December 3, 2009
Art Unit 1793

JS

/Stanley Silverman/

Supervisory Patent Examiner, Art Unit 1793